TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Application No.	09/802,707
Filing Date	March 8, 2001
First Named Inventor	
Art Unit	1754
Examiner Name	Lish, Peter J.
Attorney Docket Number	71300P010

Total Number of Pages in This Submission: 41

ENCLOSURES *(check all that apply)*

- ☒ Fee Transmittal Form
- ☐ Fee Attached
- ☐ Amendment / Response
  - ☐ After Final
  - ☐ Affidavits/declaration(s)
- ☐ Extension of Time Request
- ☐ Express Abandonment Request
- ☐ Information Disclosure Statement
  - ☐ PTO/SB/08
- ☐ Certified Copy of Priority Document(s)
- ☐ Response to Missing Parts/ Incomplete Application
  - ☐ Basic Filing Fee
  - ☐ Declaration/POA
- ☐ Response to Missing Parts under 37 CFR 1.52 or 1.53
- ☐ Drawing(s)
- ☐ Licensing-related Papers
- ☐ Petition
- ☐ Petition to Convert a Provisional Application
- ☐ Power of Attorney, Revocation Change of Correspondence Address
- ☐ Terminal Disclaimer
- ☐ Request for Refund
- ☐ CD, Number of CD(s)
- ☐ After Allowance Communication to Group
- ☐ Appeal Communication to Board of Appeals and Interferences
- ☒ Appeal Communication to Group **(Appeal Notice, Brief, Reply Brief)**
- ☐ Proprietary Information
- ☐ Status Letter
- ☒ Other Enclosure(s) *(please identify below):*

Return receipt postcard

Remarks

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm or Individual name	Angelo J. Gaz, Reg. No. 45,907 BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP
Signature	
Date	1/18/05

CERTIFICATE OF MAILING/TRANSMISSION

I hereby certify that this correspondence is being deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to: Mail Stop Appeal Brief-Patents, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Typed or printed name	Nadya Gordon		
Signature	Nadya Gordon	Date	January 18, 2005

FEE TRANSMITTAL for FY 2005

Patent fees are subject to annual revision.

☐ Applicant claims small entity status. See 37 CFR 1.27.

TOTAL AMOUNT OF PAYMENT ($) 500.00

Complete if Known	
Application Number	09/802,707
Filing Date	March 8, 2001
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METHOD OF PAYMENT *(check all that apply)*

☐ Check ☐ Credit card ☐ Money Order ☐ None ☐ Other (please identify): _____

☒ Deposit Account Deposit Account Number: 02-2666 Deposit Account Name: Blakely, Sokoloff, Taylor & Zafman LLP

For the above-identified deposit account, the Director is hereby authorized to: (check all that apply)

☒ Charge fee(s) indicated below ☐ Charge fee(s) indicated below, except for the filing fee

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FEE CALCULATION

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
1051	130	2051	65	Surcharge - late filing fee or oath	
1052	50	2052	25	Surcharge - late provisional filing fee or cover sheet.	
2053	130	2053	130	Non-English specification	
1251	120	2251	60	Extension for reply within first month	
1252	450	2252	225	Extension for reply within second month	
1253	1,020	2253	510	Extension for reply within third month	
1254	1,590	2254	795	Extension for reply within fourth month	
1255	2,160	2255	1,080	Extension for reply within fifth month	
1401	500	2401	250	Notice of Appeal	
1402	500	2402	250	Filing a brief in support of an appeal	500.00
1403	1,000	2403	500	Request for oral hearing	
1451	1,510	2451	1,510	Petition to institute a public use proceeding	
1460	130	2460	130	Petitions to the Commissioner	
1807	50	1807	50	Processing fee under 37 CFR 1.17(q)	
1806	180	1806	180	Submission of Information Disclosure Stmt	
1809	790	1809	395	Filing a submission after final rejection (37 CFR § 1.129(a))	
1810	790	2810	395	For each additional invention to be examined (37 CFR § 1.129(b))	

Other fee (specify) _____

SUBTOTAL (2) ($) 500.00

SUBMITTED BY *Complete (if applicable)*

Name (Print/Type)	Angelo J. Gaz	Registration No. (Attorney/Agent)	45,907	Telephone	(310) 207-3800
Signature				Date	01/18/05

Based on PTO/SB/17 (12-04) as modified by Blakely, Sokoloff, Taylor & Zafman (wtr) 12/15/2004.
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AF

Attorney's Docket No.: 71300P010

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Application of:	
Mike G. Roemmler	Patent Office: Lish, Peter J.
Serial No.: 09/802,707	Art Unit: 1754
Filed: March 8, 2001	Confirmation No.: 7947
For: **METHOD OF MAKING EXPANDED GRAPHITE WITH HIGH PURITY AND RELATED PRODUCTS**	

REPLY BRIEF

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Appellant submits the following Reply Brief pursuant to 37 C.F.R. § 1.193(d) for consideration by the Board of Appeals and Interferences ("Board"). This Reply Brief is responsive to the Examiner's Answer of November 16, 2004.

Supplemental Appeal Brief's Arguments Stand

Appellant believes that the arguments of the Supplemental Appeal Brief filed May 11, 2004 are still valid. Thus, this document will address some of the errors and new issues raised by the Examiner's Answer.

Arguments

I. Group I Under 35 U.S.C. § 102(b)

Responding to Group I Under 35 U.S.C. § 102(b) of the Appellant's arguments, the Examiner states that the Examiner is relying on the initial heat treatment step of Greinke (U.S. Patent 5,582,811 issued to Greinke et al) and not a second heat treatment. The Examiner then uses examples 10 and 11 to show that Greinke teaches the first heat treatment to temperatures as high as 1200°C and 1700°C, respectively, and thus, that the claimed purifying at a temperature of at least 1750°C is disclosed.

However, this logic is unfounded. First, as admitted by the Examiner and pointed out by the Appellant, in no instant does Greinke teach heat treatment at a temperature greater than 1700°C. Second, Greinke teaches away from example 10 as example 10 is a "comparative example" (see col. 7, line 31 of Greinke) where the material begins to blister after only ninety days, and thus fails according to Greinke's standard of no blistering for a substantial number of months, such as twelve months (see Grienke, col. 4, lines 28-30). Second, it is not possible to use example 11 as a "spring board" to disclose any temperature between 1700°C to infinity to read on Appellant's claims because Appellant's claimed temperatures provide a criticality (see MPEP § 2144.05.II.A) of purifying expanded graphite under vacuum with chlorine atmosphere to not more than 10 parts per million (ppm) elemental impurities (see Appellant's specification, paragraph 27 as originally filed). However, the foil of example 11 of Greinke does not teach or suggest such criticality. The example says nothing about elemental impurities (e.g., Cu, Fe, Mo, etc.), but only says that the foil includes 180 ppm of chlorine but less than 5 ppm of leachable chlorine (See Greinke col. 7, lines 46-47).

Further, the Application describes embodiments wherein compacted sheets are subjected to a vacuum purification. Following purification the sheets which have a more expansive structure than a standard foil (as described at paragraph 21, of the Application, Appellant's sheets are formed by passing expanded graphite through a double belt press) are pressed into articles such as foils. This technique for forming a highly purified graphite foil is far different than subjecting a foil to high

temperature, as taught by Example 11. Specifically, the higher temperature purification of compacted sheets of the Application provides a critical increase in purity. On the other hand, Greinke can not support the critical purity because Greinke teaches treating (a) a more highly compressed graphite foil of a standard dimension (see Greinke col. 1, lines 42-50; col. 7, lines 43-45), and (b) at a reduced temperature (e.g., a temperature below at least 1750°C).

Moreover, Greinke describes that a heat treatment to remove hydrophilic acid groups from the graphic surface should have a temperature limitation below the fracturing temperature of the stabilizing functional group (see Greinke col. 5, lines 38-47). Thus, the heat treatments of examples 10 and 11 should be limited according to this teaching.

Consequently, Greinke does not teach a temperature above 1700°C as required by Appellant's Group I claims. Moreover, Greinke does not suggest the claimed optimum range of greater than 1750°C to provide increased purity in an ambient of chlorine as disclosed in Appellant's specification.

II. Group II Under 35 U.S.C. § 102(b)

Addressing Group II Under 35 U.S.C. § 102(b) of Appellant's arguments, the Examiner states that col. 4, lines 15-24 of Greinke, teaches grinding or compacting the graphite material, following purifying, of Appellant's claims. However, this section of Greinke clearly states that "the exfoliation step cannot, of itself, serve as the high temperature chemical reaction heat treatment in accordance with the present invention." The Examiner's answer for Group I above asserts that the first high temperature chemical reaction (the 1700°C heat treatment of example 11 of Greinke) is the purifying of Appellant's claims. The Examiner cannot have it both ways. If the heat treatment of the foil in Greinke is the purifying treatment, then, according to Greinke, the graphite must be compressed or formed into a flexible graphite foil prior to purifying that foil. Moreover, Greinke does not suggest grinding or compacting the purified graphite material since the cited language supports compressing exfoliated graphite (see col. 4, lines 14-15 of Greinke stating "The exfoliated graphite may then be compressed..."), where exfoliated graphite cannot be high temperature treated

graphite (see col. 4, lines 12-15 of Greinke). Thus, the compression of the exfoliated graphite or worms into foil in Greinke cannot teach compression of purified foil graphite material and can not be performed during exfoliation, but must instead occur before purification.

In addition, in response to this section, the Examiner points out Greinke col. 4, lines 32-35 which support that "the two chemical reactions of the present invention can occur separately or simultaneously . . . " However, although these words are in Greinke, so are the requirement above that the exfoliation step cannot serve as the first high temperature chemical reaction heat treatment in accordance with the present invention. Thus, Greinke col. 4, lines 32-35 do not support what is expressly prohibited by the reference.

Consequently, Greinke does not teach or suggest grinding or compacting, following purifying, as required by the Appellant's Group II claims.

III. Group III Under 35 U.S.C. § 103(a)

In addressing Group III Under 35 U.S.C. § 103(a) of Appellant's arguments, the Examiner states that because Junttila (U.S. Patent No. 4,533,086 issued to Junttila) teaches grinding of graphite, that it would be obvious to grind and compact the foil of Greinke in order to make it suitable for a variety of applications. First, Junttila does not address, teach, or suggest grinding of a foil or a sheet of graphite material, but mentions graphite in the form of an ore, a low purity graphite, and a high purity graphite (see col. 1, lines 10-45). Thus, Junttila does not motivate grinding up the purified foil of Greinke, but motivates grinding graphite ore to produce low or high purity graphite.

Similarly, there is no motivation in Greinke to grind up the foil or sheets of graphite described therein. Specifically, Greinke supports forming graphite foil that does not blister for twelve months (see Greinke col. 4, lines 25-32) of flexible graphite that are "thin sheets" or "foil" useful for high temperature applications and that have beneficial insulating properties (see Greinke col. 1, lines 16-50). Thus, although there is disclosure in Greinke of using graphite foil, there is no suggestion or motivation to grind up the graphite foil.

Consequently, Greinke does not teach or suggest compacting, then grinding, following purifying, as required by the Appellant's Group III claims.

IV. Group I Under 35 U.S.C. § 103(a)

In addressing Group I Under 35 U.S.C. § 103(a) of Appellant's arguments, the Examiner states that Matsumoto (U.S. Patent No. 5,505,929 issued to Matsumoto et al.) takes place under the same conditions (pressure, temperature, relative gas flow) to that of Greinke, and thus it is germane to insert the purifying steps for forming graphite from carbon as taught by Matsumoto (see Abstract) into the heating of graphite foil to produce a blister-free material of Greinke (see Greinke col. 4, lines 25-32). However, the purification process of Matsumoto does not take place under the same temperature as that of Greinke, as the purification of Matsumoto is taught tat 3000°C for 10-30 hours, such as to form a non-expanded highly purified graphite, while Greinke teaches heat treating an expanded graphite (see Greinke col. 3, lines 7-21) at temperatures of approximately 1000°C for between 5 and 20 seconds to produce an expanded graphite foil that is blister free for up to 12 months (see Greinke col. 4 lines 25-44; and col. 5, lines 43-54). More specifically, Matsumoto teaches manufacturing non-expanded high purity graphite from carbon in a single chamber using an induction heating high frequency coil where the purification process is particularly for transforming metallic impurities in the graphite material into hallogenated material that is removed from the graphite material (see Matsumoto col. 1, lines 18-20; col. 4, lines 54-61; and col. 5, lines 7-9). Thus, there is no motivation to use the metallic impurities removing technology for non-expanded graphite of Matsumoto on an expanded graphite foil of Greinke because the properties of expanded graphite are different than that of non-expanded graphite. As compared to non-expanded graphite, expanded graphite has increased space between bonds, space between particles, flexibility, anisoptroy, insulation, delamination and blistering (see Greinke col 1, lines 17-49). However, the expansion between particles of expanded graphite provides looser bonds to impurities which allows release impurities at lower heat (see Greinke col 1, lines 17-36 teaching an expansion of 80 times between particles resulting in an inability of expanded graphite to

vent thermally activated moisture particles bonded therein quickly enough to avoid blistering). Consequently, the combination of Matsumoto and Greinke is impermissible as described in Appellant's Supplemental Appeal Brief.

In addition, in response to this section, the Examiner points out the Greinke mentions that graphite material is "slowly heated up to 1700°C", and that heating to such a high temperature in 5-20 seconds is surely not considered to be "slow heating." Appellant points out that the time period over which something is "slowly heated" is relative. Specifically, Greinke describes heating a foil which is approximately 0.020 inches thick (see Greinke col. 7, lines 19-22). Appellant contends that heating such a thin layer of material using known methods, such as annealing, flash annealing, laser, or gas jets could easily provide such temperatures to such material within 20 seconds. As such, the protracted high temperature heating of Matsumoto could destroy Greinke's process, such as by having a temperature which is above the limitation at the fracturing temperature of the stabilizing functional group of Greinke (see Greinke col. 5, lines 43-48).

Consequently, Greinke and Matsumoto can not be properly combined to teach or suggest the limitations of Appellant's Group I claims.

V. Group II Under 35 U.S.C. § 103(a)

Replies above for Groups I and II apply here as well.

VI. Group III Under 35 U.S.C. § 103(a)

Replies above for Groups I and III apply here as well.

VII. Conclusion and Relief

Based on the Foregoing, Appellant requests that the Board overturn the Examiner's rejection on all pending claims and hold that all of the claims of the present application are allowable.

VII. Conclusion and Relief

Based on the Foregoing, Appellant requests that the Board overturn the Examiner's rejection on all pending claims and hold that all of the claims of the present application are allowable.

Respectfully submitted,
BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

Date: January 18, 2005

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CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited as First Class Mail with sufficient postage with the United States Postal Service in an envelope addressed to: Mail Stop Appeal Brief-Patents, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on January 18, 2005.

Nadya Gordon 1/18/05

Nadya Gordon *Date*